5_5_Magic_BLAST_contig_subsets

July 25, 2021

[1]:
```
import numpy as np
import math
import pandas as pd
from matplotlib import pyplot as plt
import seaborn as sns
from matplotlib.ticker import MaxNLocator
from pandas.plotting import scatter_matrix
import pathlib
import warnings
warnings.filterwarnings('ignore')
```

[2]:
```
from IPython.core.display import display, HTML
display(HTML("<style>.container { width:95% !important; }</style>"))
```

```
<IPython.core.display.HTML object>
```

[3]:
```
PROJECT_CODE='PRJNA606875'
BASE_PATH = f'/mnt/1TB_0/Data/Assembly/{PROJECT_CODE}/'

dbname='nt'
kmer='k141'

f_contigs_file_tail=f'_{dbname}_magic_blast_asc_contigs.txt'
```

[4]:
```
subsets=['vector','virus']
```

[5]:
```
sra_list=['SRR11093265',␣
↪'SRR11093266','SRR11093267','SRR11093268','SRR11093269','SRR11093270','SRR11093271']
```

[6]:
```
def read_matched(asc_file, ignore_string=None):
    contigs=[]
    accessions=[]
    desctiptions=[]
    cigars=[]
    with open(asc_file, 'r') as infile:
        data = infile.readlines()
        for i in data:
            output=i.split('\t')
```

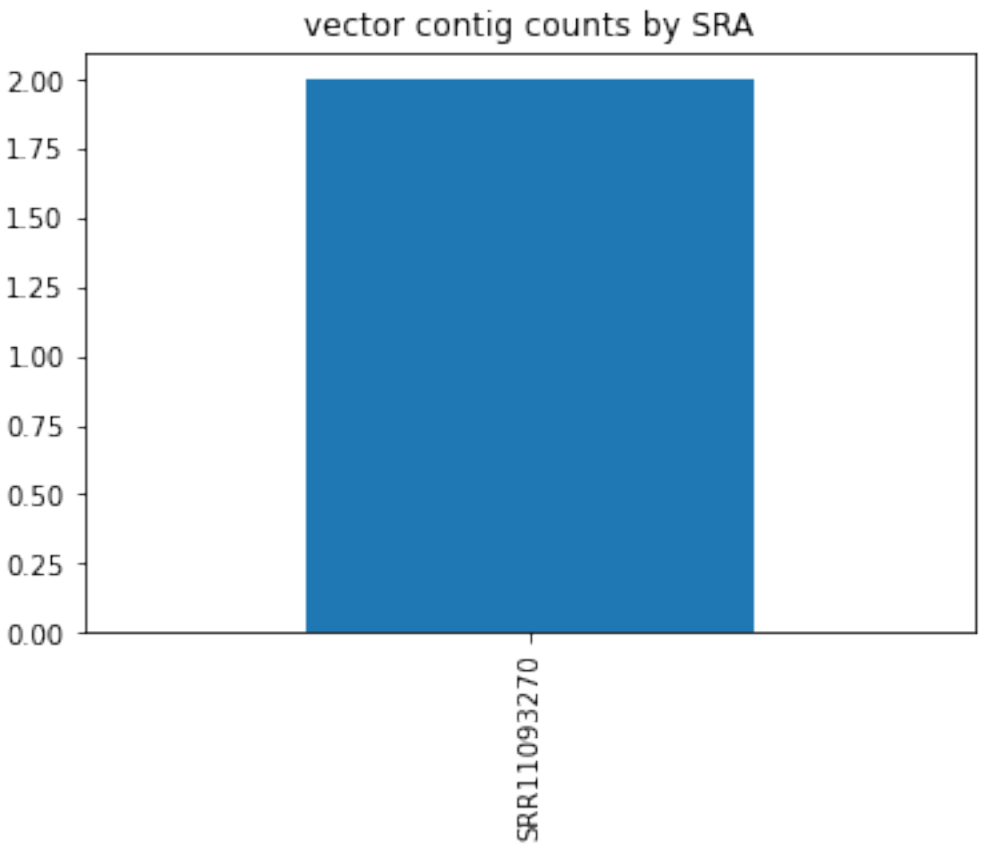
```
            descr=output[2].split(' ',1)[1]
            if ignore_string is not None and ignore_string in descr:
                pass
            else:
                contigs.append(output[0])
                accessions.append(output[2].split(' ')[0])
                desctiptions.append(descr)
                cigars.append(output[5])
    return contigs, accessions, desctiptions, cigars
```

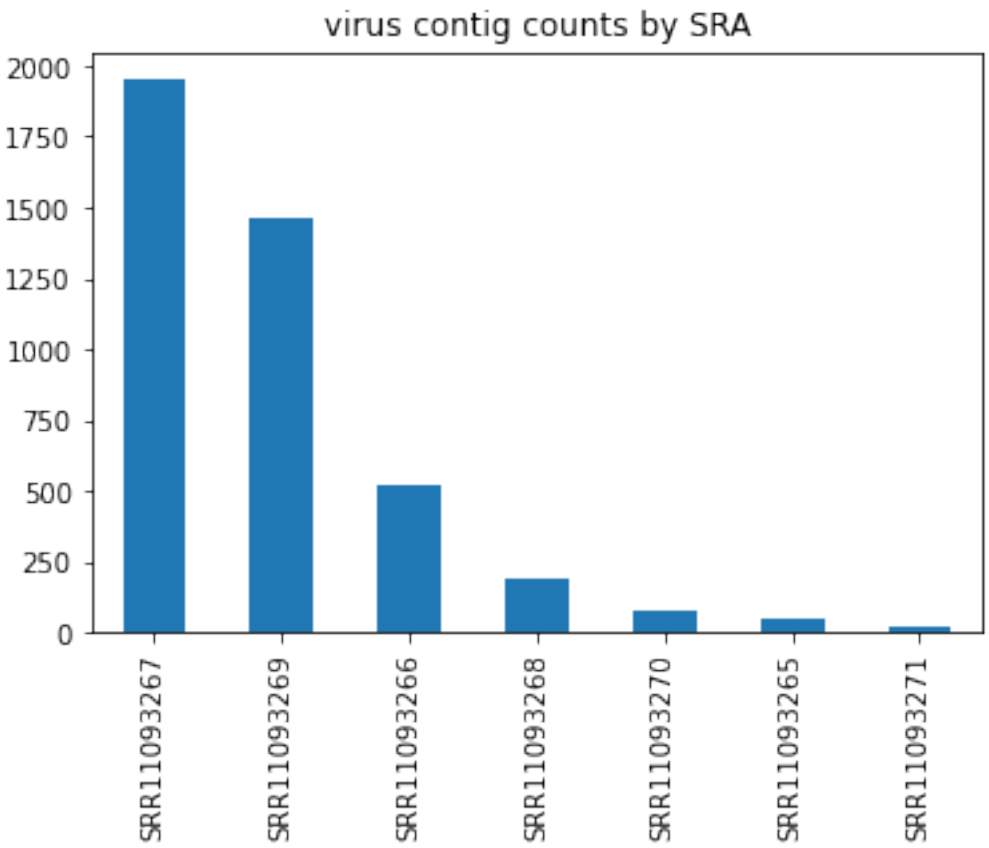
[7]:
```
def process_file(asc_file, sra, ignore_string=None):
    contigs, accessions, desctiptions, cigars=read_matched(asc_file,␣
↪ignore_string)
    sra_list=[sra] * len(contigs)
    df = pd.DataFrame(list(zip(sra_list, contigs, accessions, desctiptions,␣
↪cigars)),
                columns =['sra', 'contig', 'accession','description','cigar'])
    return df
```

[8]:
```
def plot_df(df, dataset):
    df['sra'].value_counts().plot(kind='bar')
    plt.title(dataset +' contig counts by SRA')
    plt.show()
```

[9]:
```
def workflow():
    for dataset in subsets:
        path = BASE_PATH+'contigs_subsets/'+dataset+'/'
        frames=[]
        for sra in sra_list:
            f=sra+'_'+dataset+'_subset'+'_'+f_contigs_file_tail
            if dataset=='virus':
                df=process_file(path+f, sra, ignore_string='retrovirus')
            else:
                df=process_file(path+f, sra)
            if len(df)>0:
                frames.append(df)
        df_result = pd.concat(frames)
        df_result.to_csv(path+PROJECT_CODE+'_'+dataset+'_dataframe.csv')
        plot_df(df_result, dataset)
```

[10]:
```
workflow()
```


vector contig counts by SRA
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
SRR11093270


virus contig counts by SRA
2000
1750
1500
1250
1000
750
500
250
0
SRR11093267
SRR11093269
SRR11093266
SRR11093268
SRR11093270
SRR11093265
SRR11093271

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